MIDWAY SUNSET COGENERATION PROJECT (85-AFC-3C)
Staff Analysis: Request to Amend, Air Quality Condition of Certification (4-18)

Prepared by: Joseph M. Loyer, August 11, 1999

AMENDMENT REQUEST

AERA Energy, LLC (AERA), the owner/operators of the Midway Sunset Cogeneration Company (MSCC) Project have requested that the California Energy Commission (Commission) modify Condition of Certification Air Quality 18 (AQ-18), to reflect the planned retrofit of Turbines A, B and C with Dry Low NO_x (DLN) combustion technology capable of controlling NOx emissions to below 10 ppm (parts per million) @ 15% O_2.

Currently, turbines A and B use the Quiet Combustor Technology from GE (a water-injection system) to control NOx emissions to 22 ppm. Turbine C was recently retrofitted to use dry-low NOx technology to control NOx emissions to 16.4 ppm (DLN-15). AERA plans to install dry-low NOx technology into all three of the existing turbines at the MSCC facility in stages to control NOx emissions to 10 ppm (DLN-9). The DLN-9 retrofit in turbines A and B will also result in a reduction of Carbon Monoxide (CO) emission (approximately 40 lbs/hr each). AERA will apply to the San Joaquin Valley Unified Air Pollution Control District (District) for an Emission Reduction Credit (ERC) for the reduction in NOx emissions from Turbines A, B and C. AERA will apply the NOx ERCs and CO emission reductions to the Western Midway Sunset Cogeneration Company Project.

LAWS, ORDINENCES, REGULATIONS AND STANDARDS

There are no applicable LORS associated with this amendment request.

ANALYSIS

AERA is proposing to install the DLN-9 technology into turbine Unit B by mid-November 2000, into Unit A by mid-March 2001 and Unit C by mid-April 2001. AERA is proposing that the new NOx emission limits reflect 10 ppm @ 15% O_2 even though the DLN-9 technology is capable of control emissions to below 9 ppm. AERA is requesting this extra operating flexibility to allow for temporary excursions beyond 9 ppm. The new proposed emissions limit at 10 ppm is down from 22 ppm for Units A and B and 16.4 ppm for Unit C. Additionally, the DLN-9 technology will reduce CO emission from the water injection technology of units A and B (~40 lbm/hr) which will also be reflected in the new emission limits.

The new mass emissions limits for NO_2 for units using the DLN-9 technology will be set at 36.08 lbs/hr. After all three turbines have been retro-fitted with the DLN-9, they will have a total combined emission reduction of 128.79 pounds of NO_2 per

hour. That is approximately 450 tons of NO_2 per year (assuming 80% dispatch rate). The new CO mass emission limit will be set at 54.91 lbs/hr per turbine (down from 94.00 lbs/hr) for a total savings of 117.27 lbs/hr for all three turbines or approximately 411 tons per year (assuming 80% dispatch).

AERA will submit the NOx emission reductions to the San Joaquin Valley Unified Air Pollution Control District (District) to bank them as emission reduction credits (ERCs). The resulting NOx credits will then be used to mitigate AERA's application for certification for the proposed Western Midway Sunset Cogeneration Company Project (Western MSCC), which is currently before the Commission.

The District banking rules require that only a percentage of these emission reductions (90% in this case) can be converted into credits. Therefore, even though the NOx emission reductions will be banked and used by AERA, they will result in a net emission reduction (10% of the original). Staff can not predict the actual net emission reductions that will occur prior to the District review and issuance of these emission reductions as ERCs. However, it is safe to assume that based on an 80% dispatch rate of the emitting facility that the actual NOx emission reduction will be approximately 45 tons per year (see calculation below).

NOx Emission Benefit = (128.79 lbs/hr) (8760 hr/yr) (80%) (10%))(2,000 lbs/ton)

AERA will use the CO emission reduction for the proposed Western MSCC Project's Prevention of Significant Deterioration (PSD) application through the US Environmental Protection Agency (US EPA). The CO emission reductions are expected to completely offset the proposed Western MSCC incremental increase in CO emissions, which will result in no net change for CO. Thus, there will be no ultimate CO emission benefit from the retrofit of DLN-9 combustors at the MSCC facility.

Thus, this amendment request and the ultimate use of NOx and CO emission reductions will result in an overall net air quality benefit for NOx and no significant deterioration for CO.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed the proposed amendment and concludes that there will be no new or additional significant impacts associated with approving the request.

Staff recommends the following changes to the existing Condition of Certification Air Quality 18. New language is shown as bold and underlined.

PROPOSED CHANGES TO EXISTING CONDITIONS OF CERTIFICATION

4-18 Pollutant emissions from each water injection combustion turbine shall not exceed the following limits (in pounds mass per hour, lbm/hr) except during times of start-up or shutdown (as described in Condition 4-44):

Gas Fired Case:

Particulate	9.98	lbm/hr
Sulfur Compounds	0.92	lbm/hr as SO2
Oxides of Nitrogen	79.01	lbm/hr as NO2
Hydrocarbons (nonmethane)	9.00	lbm/hr
Carbon Monoxide	94.00	lbm/hr

Pollutant emissions from each **DLN-15** dry low NOx combustion turbine shall not exceed the following limits (in pounds mass per hour, lbm/hr) except during times of start-up or shutdown (as described in Condition 4-44):

Gas Fired Case:

Particulate	9.98	lbm/hr
Sulfur Compounds	0.92	lbm/hr as SO2
Oxides of Nitrogen	59.90	lbm/hr as NO2
Hydrocarbons (nonmethane)	9.00	lbm/hr
Carbon Monoxide	54.91	lbm/hr

Pollutant emissions from each DLN-9 dry low NOx combustion turbine shall not exceed the following limits (in pounds mass per hour, lbm/hr) except during times of start-up or shutdown (as described in Condition 4-44):

Gas Fired Case:

Particulate	**9.98**	**lbm/hr**
Sulfur Compounds	**0.92**	**lbm/hr as SO2**
Oxides of Nitrogen	**36.08**	**lbm/hr as NO2**
Hydrocarbons (nonmethane)	**9.00**	**lbm/hr**
Carbon Monoxide	**54.91**	**lbm/hr**

Verification:

The combustion turbine identified as Unit B shall have completed the installation and testing of DLN-9 technology no later than January 31, 2001. The combustion turbine identified as Unit A shall have completed the installation and testing of DLN-9 technology no later than May 31, 2001. The

combustion turbine identified as Unit C shall have completed the installation and testing of DLN-9 technology no later than June 30, 2001.

a. At least 60 days before commercial operation date of the power cogeneration facility, or 60 days before the permit to operate anniversary date, the owners shall submit to the SJVUAPCD, CARB, and the CEC a detailed performance test plan for the power plant's AECS. The performance test will be funded by the owners and conducted by a third party approved by the SJVUAPCD and CARB. The SJVUAPCD will notify the owners and the CEC of its approval, disapproval, or proposed modifications to the plan within 30 days of receipt of the plan. The owners shall incorporate the SJVUAPCD and the CEC's comments on or modifications to the plan.

b. The owners shall notify the SJVUAPCD and the CEC, within five days, before the facility begins commercial operation. The owners shall also notify the SJVUAPCD one week prior to the beginning of testing to allow the SJVUAPCD to observe and/or conduct concurrent sampling.

c. Compliance with emission limits shall be demonstrated by a SJVUAPCD witnessed sample collection performed by an independent testing laboratory within 60 days after startup of this equipment and annually within 60 days prior to permit anniversary date.

d. The owners shall submit the results of the compliance test within 30 days of completion of the tests. The owners shall submit to the SJVUAPCD, its application for a Permit to Operate via registered mail. The owners shall submit a copy of the application to the CEC within 10 days of its submittal to the SJVUAPCD. The SJVUAPCD shall approve or disapprove the application as prescribed in SJVUAPCD rules.